



OMEGA ANALYTICS

Mapping the Future of Rail Transport

VALUE PROPOSITION

- Omega Analytics delivers innovative solutions to challenging rail transport planning problems in areas spanning infrastructure, rolling stock and operations
- Our integrated approach combines geo-spatial analytics and decision science with rail transport engineering and economics knowledge
- Our analytical and design solutions consistently balance technical excellence, cost efficiency, and sustainability thus reducing project execution risks and timelines
- Mission is to leverage domain knowledge, emerging information technologies and business partnerships to improve planning, design and construction of rail transport systems worldwide



COMPANY OVERVIEW

- Pioneer in the application of digital elevation models and Geographic Information Systems (GIS) based solutions for technical feasibility studies of new line projects in Indian Railways
- Successfully completed studies for over 3000 km of new lines across India, including over 500 km in complex mountain terrain
- Team and partner network with expertise in geospatial technologies (GIS, CAD, and photogrammetry), drone imaging, soil investigation, traffic studies, quantity estimation and construction project management.
- Designed and developed integrated project management / document management / team collaboration mobile and web-based applications for site survey and construction information management in rail projects
- Received commendations from Indian Railways for high quality of work, recipient of Dept. of Science & Technology (Government of India) award for innovation and entrepreneurship



CORE VALUES



Innovation

Embracing emerging technologies and methodologies that advance the field of rail transport planning



Technical Excellence

Unwavering commitment to accuracy and detail, recognizing the impact of our work on public cost, safety and convenience



Sustainable Intelligence

Endeavouring to find environmentally responsible solutions, ensuring our proposals and designs minimize ecological impact while maximizing long-term societal benefit



Collaborative Integration

Fostering seamless cooperation between information technology specialists, rail engineers, and stakeholders, breaking down silos to create holistic solutions



Integrity

Upholding the highest standards of professional ethics, ensuring transparent and trustworthy recommendations for our clients

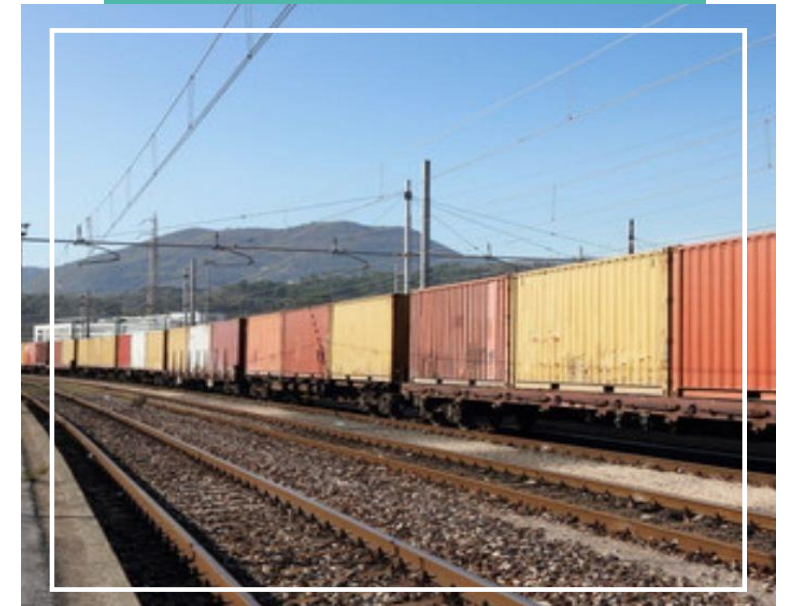
SERVICES

Rail Infrastructure

- Route selection and alignment design
- Feasibility studies – for new and additional rail line projects
- Drone based field data acquisition
- User requirements and project / system specifications analysis
- Verification & validation of field survey and investigation reports
- Bridge hydrological investigations and hydraulic design safety
- Electrical traction and signalling infrastructure plans
- Land records management
- Cost benefit analysis of transport infrastructure

Rail Operations

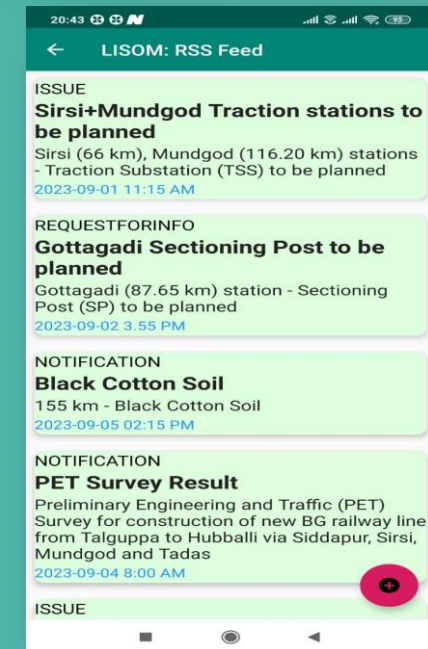
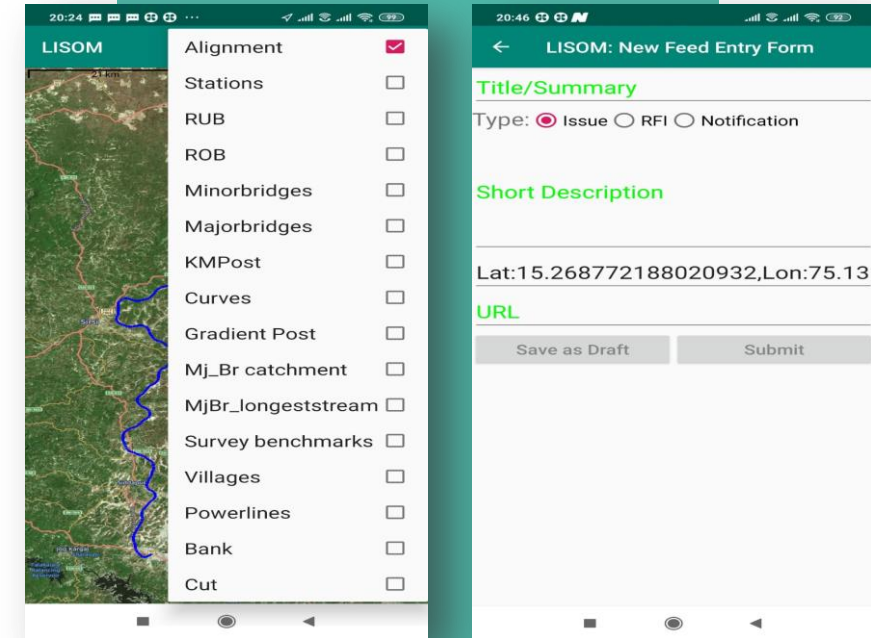
- Timetable optimization and train scheduling
- Delay reduction strategies
- Network capacity analysis and enhancement
- Multi-modal integration planning
- Passenger flow optimization
- Data analytics for decision support



PRODUCTS

LISOM – Linear Infrastructure Surveying Operations Management Software

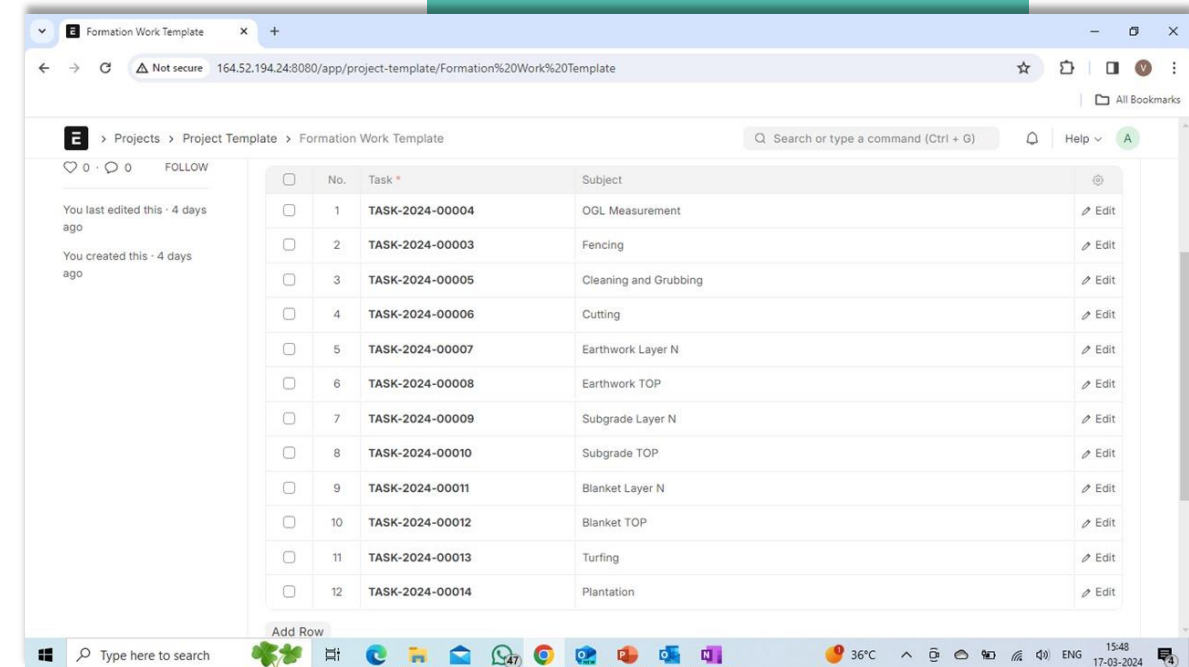
- Mobile GIS app
- Easy to understand map, image, table based information
- Supports geo-tagged notifications, information feeds, photo sharing
- All users access the same version
- Multiple project details
- Facilitates design verification and reduces errors in construction through better coordination between field units and design teams
- Improves project productivity, governance and reduces risks



PRODUCTS

LICOM - Linear Infrastructure Construction Information Management System

- IT system that integrates data, design decisions & knowledge
- Developed for authorities, contractors, surveyors & consultants engaged in planning, design & construction
- Geographic Information System, document management, collaboration & project management features
- Provides users with complete, relevant and up-to-date project information
- Customizable information views and reports for different users using common data model
- Threaded conversations, tags, or search functions to organize and track important information shared in a team
- Robust controls for project group administrators to manage system user permissions and roles.
- Easy-to-use web-based user interface accessible on mobile phones, tablets & desktops



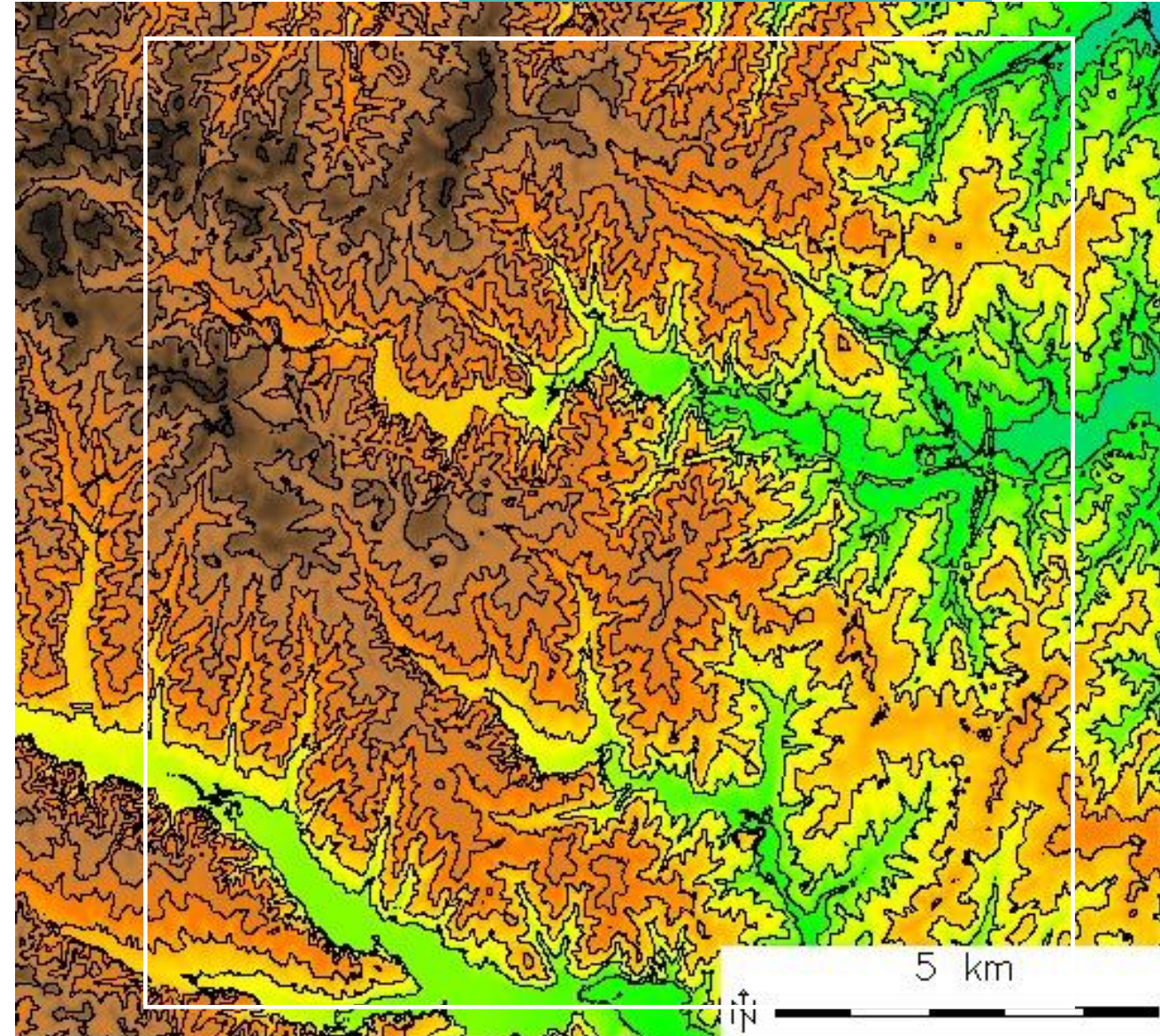
TECHNICAL EXPERTISE

Advanced Geospatial Capabilities

- Topographic data processing and terrain modelling
- Remote sensing and satellite imagery analysis
- GIS-based multi-criteria decision analysis
- Corridor mapping and visualization

Specialized Software Proficiency

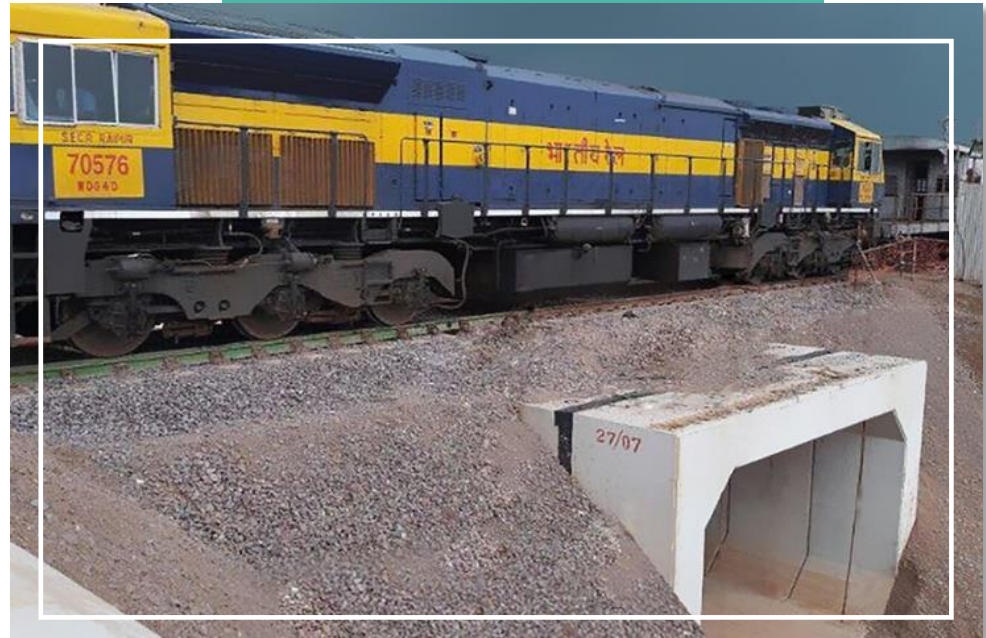
- ArcGIS / QGIS
- AutoCAD Civil 3D
- Custom spatial analysis tools
- Python for spatial analytics



CLIENT SUCCESS HIGHLIGHTS

Hydrological Investigation

- Severe flooding washed away in many sections of a railway embankment in North India
- After a quick hydrological study of the river basin, about 25 new box culverts were proposed to prevent recurrence of flood damage
- Drainage network was delineated from a digital terrain model and sites with adequate bank height were identified from the rail longitudinal profile
- Time and effort for ground survey and construction were considerably reduced



CLIENT SUCCESS HIGHLIGHTS

Route Selection and Alignment Design

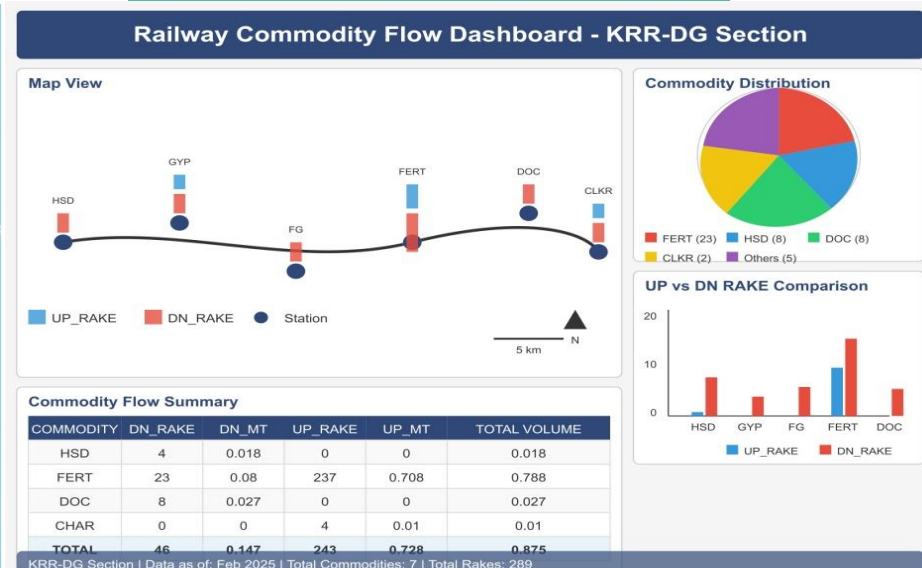
- The challenge was to design a rail alignment in the Himalayas, requiring crossing several mountain ranges and climbing over 1200 m between origin and destination
- Widening the path search area, a non-intuitive route that makes a westward traverse before making a U-turn and doubling back in a north-westerly direction was proposed in just a few days
- This route does not require high bridges or underground stations, which results in a significant cost reduction and ease of construction in comparison with other proposals evaluated by the rail authority



CLIENT SUCCESS HIGHLIGHTS

Traffic Study

- Conducted comprehensive network analysis across 5,000+ km of railway infrastructure to optimize track doubling strategy
- Developed custom Python algorithms to determine optimal routing for 1,600+ origin-destination freight pairs
- Analyzed line capacity utilization and delay patterns to identify critical bottlenecks in the existing network
- Pioneered geotagging of public requirements from news sources to incorporate community needs into infrastructure planning
- Delivered data-driven recommendations balancing freight efficiency, passenger service demands, and infrastructure constraints



TEAM

- Leadership with combined 50+ years of experience in rail transport planning, Enterprise IT systems, data science, AI/ML models, technology consulting
- Multidisciplinary team comprising engineers, MBAs, chartered accountants, and GIS technicians providing comprehensive solution development
- Cross-functional expertise spanning railway engineering, data science, geo-spatial analytics, and transport economics
- Strategic advisors with backgrounds in railway infrastructure projects and railway operations research
- Project delivery specialists experienced in translating complex analytical solutions into practical railway implementation
- Collaborative leadership approach fostering partnerships with railway operators, infrastructure managers, and technology providers



CLIENTS



दिल्ली मेट्रो रेल कॉर्पोरेशन लिमिटेड
Delhi Metro Rail Corporation Limited



Department of Mines and Geology
(Govt. of karnataka)



TESTIMONIALS

1. Delhi Metro Rail Corporation

Work has been completed with a high degree of professionalism. The quality of the project deliverables and the ability to meet time schedules was commendable

2. L&T Urban Infrastructure Ltd

Omega Analytics provided a very innovative GIS based solution to support our planning and decision making process. The project was executed with a high degree of professionalism. The quality of the project deliverables and the ability to meet time schedules was commendable

3. South Western Railway

Omega Analytics, used satellite images, advanced digital terrain models and mathematical programming techniques to design the alignments. This enabled South Western Railway to finalize the alignments and estimates in short period of time.

The technology used was very effective as the project sites were in forest areas and difficult mountain sections where conventional survey methods could not be used. Omega Analytics showed considerable diligence and commitment in these projects.

4. State Bank of India

We have been using the services of Omega Analytics in the area of digital mapping solutions of real estate. This is a timely innovation and has opened up new vistas of opportunity in our work. The information/data provided by them in this regard has been accurate, dependable and very useful.

KEY ADVANTAGES

Access to Specialized Engineering Talent

- Expertise in transport planning and advanced data analytics capabilities at competitive costs

Complementary Time Zone Benefits

- Indian teams process data and develop models during their workday
- Overseas teams can review deliverables at the start of their day, accelerating project timelines

Cost-Effective Operational Scaling

- 30-40% cost savings while maintaining quality standards
- Lower overhead costs for office space and infrastructure
- Financial flexibility to handle multiple large-scale projects simultaneously

Multi-Project Management Excellence

- Large talent pool enables parallel project execution
- Established project management frameworks ensure consistent quality
- Efficient handling of routine tasks like data processing and documentation
- Allows overseas teams to focus on strategic planning and client relationships
- Capability to scale resources based on project demands

CONTACT



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